

Efficient calculation of the quality factor of photonic crystal cavity
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The transfer matrix method (TMM) is used to study the transmission coefficient of optical cavities embedded in a photonic crystal slab. This is an efficient method to obtain the cavity quality factor and the peak transmission frequency for a large number of cavity geometries. The results show that the quality factor can exceed 10,000 with a slab of 25 layers with the cavity located at the center layer. There is also a shift for the peak transmission frequency which approaches a fixed value when the number of layers on both side of the cavity is increased.